

App. No. 10/710,726
 Preliminary Amendment dated March 28, 2005

Amendments to the Specification (other than claims):

Please replace paragraph ~~[0051]~~⁴⁶ with the following amended paragraph:

TR
 9-21-06

~~[0051]~~⁴⁶ In addition, though the method for measuring the distance to objects is not limited, an AM modulation method is typically adopted. The AM modulation method is a method in which laser light or LED light is modulated at a constant frequency, and the distance is determined from the difference between the phase of the modulated signal and the phase of light reflected by an object. Namely, if a beam that is modulated at a frequency f is reflected by an object and comes back, the return beam will have a phase difference $[\square] \phi$ that is determined by the speed of light and the distance. The value of the phase difference $[\square] \phi$ depends on the speed of light c and the distance L . Therefore, if the phase difference $[\square] \phi$ is detected, the distance L can be determined. Accordingly, by rotating the scanning beam over 360 degrees in the horizontal direction using a scanning mirror, distance measurements within a two-dimensional area can be performed. The present invention can be applied to a two-dimensional range sensor. However, distance measurements within a three-dimensional region are also possible by scanning the scanning beam over a 360-degree circuit while continuously increasing or decreasing the vertical angle of the scanning mirror. In the case of the three-dimensional measurement, peripheral space may be scanned by the beam in a helical fashion, for example.